CLAIMS

1 A solder alloy having an alloy composition consisting of, by mass%,
Bi: 30 to 60%,
Ag: 0.7 to 2.0%,
Cu: more than 0% and 1.00% or less,
Ni: 0.01 to 1.00%,
Sb: 0.2 to 1.5%, and
optionally at least one selected from the group consisting of
at least one of P, Ge, Ga, and As: 0.1% or less in total,
at least one of Fe, and Co: 0.1% or less in total,
Pd: 0.1% or less,
Zr: 0.1% or less,
Zn: 0.1 % or less, and
Pb: 0.02% or less, with the balance being Sn.

2. The solder alloy according to claim 1, wherein,
the alloy composition consists of, by mass%,
Bi: 30 to 60%,
Ag: 0.7 to 2.0%,
Cu: more than 0% and 1.00% or less,
Ni: 0.01 to 1.00%,
Sb: 0.2 to 1.5%, and
optionally at least one selected from the group consisting of,
at least one of, P: less than 0.01%,
Ge: 0.01% or less,
Ga: less than 0.01%, and
As: more than 0.001% and 0.01% or less,
Co: less than 0.01%,
Pd: 0.01% or less, and
Pb: less than 0.004%, with the balance being Sn.

3. The solder alloy according to Claim 1 or 2, wherein,
the alloy composition consists of, by mass%,
Bi: 30 to 60%,
Ag: 0.7 to 2.0%,
Cu: more than 0% and 1.00% or less,
Ni: 0.01 to 1.00%, and
Sb: 0.2 to 1.5%, with the balance being Sn.

4. The solder alloy according to any one of claims 1 to 3,
wherein the alloy composition satisfies at least one of the following relations (1) to (3):
$13.00 \leq Bi/(Ag+Cu+Ni+Sb) \leq 23.27$ Relation (1)
$0.017 \leq (Ag+Cu+Ni)/Sn \leq 0.039$ Relation (2)
$70.9 \leq (Bi+Ag+Sb)/(Cu+Ni) \leq 6349$ Relation (3)
wherein Sn, Bi, Ag, Cu, Ni, and Sb in the relations (1) to (3) each represent the contents (mass%) thereof in the solder alloy.

5. A solder ball consisting of the solder alloy according to any one of claims 1 to 4.

6. A solder paste comprising a solder powder comprising the solder alloy according to any one of claims 1 to 4.

7. A solder joint comprising the solder alloy according to any one of claims 1 to 4.